REVIEWS OF BOOKS

CONTRACEPTION

Baker, John R., M.A., D.Phil. *The Chemical Control of Conception.* London, 1935. Chapman & Hall Ltd. Pp. 167. Price 15s.

In this pleasantly concise and lucid book Dr. J. R. Baker has collected and discussed the work on chemical spermicides which he has been doing during the past seven years for the Birth Control Investigation Committee. It would certainly appear that his expressed hope that his work may be regarded as a contribution to pure as well as to applied science is justified. Since the publication of Günther's paper* in 1907 there have been few serious contributions to this subject; and, so far as can be discovered from a search of the literature, such an extensive study of the spermicidal powers of pure substances has not previously been undertaken. Nor has an attempt been made by other workers to devise tests whereby the spermicidal efficiency of any one pure substance or commercial product may be directly compared with that of any other.

In this book, Dr. Baker describes in some detail how these tests were evolved—and one must be impressed by the amount of tedious and painstaking experimentation that was necessary before all the details of the tests were satisfactorily adjusted. Although, as the title indicates, Dr. Baker was primarily concerned with the effect of chemicals on human sperms, he decided to use cavy sperms in his standard tests; his chief reasons being that they are easily obtainable in large numbers and that their reactions to very different substances (particularly when suspended in albumin-saline) are almost identical with those of human sperms.

For his tests on pure substances, where he is primarily concerned with grading them according to their spermicidal power by testing their direct action on sperms, he uses as his suspension fluid a buffered glucose-saline (or one of its variants) in which cavy sperms are particularly active. For the tests on contraceptive suppositories and ointments (or jellies), when it is necessary to make the conditions as natural as possible, he uses for his suspension fluid albumin-saline, which imitates very closely the protective action that semen has on sperms. These fluids are described in detail in the second chapter of his book.

To represent an average human ejaculate, Dr. Baker selected the figures 5 c.c. and 2·5 c.c. as the average amount of moisture present in the vagina. Both these figures are open to criticism, but as his tests are primarily designed so that one substance or suppository may be compared with another, the essential factor is that the conditions should be uniform. He allows each substance to act for a definite time and finds the lowest concentration which will immobilize all sperms.

This work gives the results of tests on just over one hundred pure substances; some of these results are incomplete owing to the insolubility of the substance under examination. Dr. Baker divides them into twelve groups—headed by "Grade 9" (with an immobilizing concentration of $\frac{1}{512}$ per cent.), which contains six substances all of which are quinones, and descending in the series of $\frac{1}{256}$, $\frac{1}{128}$, $\frac{1}{64}$, etc., to "Grade −1" (with an immobilizing concentration of 2 per cent.). Finally there is an ungraded group of substances which fail to immobilize all sperms at 2 per cent. It is interesting to note that, of the substances which up to the present have been most commonly used, as the spermicidal elements in commercial contraceptives, chinosol and quinine both come low in the series, with immobilizing concentrations of $\frac{1}{4}$ per cent. and $\frac{1}{2}$ per cent. respectively. In the most recent modification of his tests, Dr. Baker uses the "killing concentration" of a substance as his end point instead of the "immobilizing concentration." On the whole there is not much difference between the two.

* Günther, G.: *Arch. ges. Physiol.*, 1907, pp. 118, 551-71.

In Chapter IV he discusses the mode of action of substances on sperms and describes how, with the assistance of Dr. Gulland, the six extremely spermicidal quinones in "Grade 9" were discovered. At the end of the book he touches on the interesting subject of the stimulation of sperms by such substances as strychnine and brucine hydrochlorides and chloral hydrate and in the postscript he gives some of his latest findings.

The final list of suppositories (p. 147) contains one or two results which appear difficult to explain. For example, if one picks out the suppositories known to contain quinine in definite amounts as stated by the manufacturers, one finds them placed in Dr. Baker's list in the reverse order to that which one would expect. Thus, Lambert's double strength "soluble" (reputed to contain 0·648 grm. quinine bisulphate) is less spermicidal than Lambert's ordinary "soluble" (containing 0·324 grm. quinine bisulphate), which in its turn is less spermicidal than Rendell's "Wife's Friend" (containing 0·14 grm. quinine acid sulphate). It is not possible here to go into the probable explanations of this apparently paradoxical result, but it is mentioned in order to suggest the necessity for accepting with some reserve the order in which commercial products are placed by Dr. Baker's tests.

Chapter VII is written by Dr. H. M. Carleton and contains a description of the work done by him and Professor Florey on the action of chemicals and commercial products, and of the Gräfenberg ring, on the vaginal or uterine tissues. The importance of this work cannot be overestimated as it is essential to establish the harmlessness or otherwise of any substance likely to be placed in the human vagina as a chemical contraceptive.

Bitches were found to be the most suitable experimental animals, owing to their relative cheapness and the fact that the canine and human vagina are lined by the same type of cells. A known quantity of the substance to be tested was placed in the vagina or uterus (in the vagina daily injections were made for periods varying up to three months). The animals were then killed and the vagina and uterus were examined macro- and microscopically. Among commercial products, the only one mentioned as producing local damage (inflammatory reaction with areas of ulceration) is quinine and urea hydrochloride. Several of the pure substances tested proved to be irritating; and unfortunately, among them was toluquinone, the most spermicidal substance so far discovered.

Dr. Carleton very rightly emphasizes the importance of testing all chemical contraceptives for possible pathological effects in experimental animals before applying them clinically. But some of the conclusions which he draws from his results would hardly appear to be justified and do in fact confuse the issue. For instance, he condemns the practice of covering a rubber cap with a contraceptive jelly and leaving it in close contact with the cervix for some hours, arguing that it may cause irritation. This would seem to throw doubt on the validity of his own experiments. Presumably he is discussing the use of chemicals which have already been proved non-irritating experimentally; for surely no responsible worker would now suggest that a chemical which has not been tested, or which under experimental conditions has proved harmful, should be used in the human vagina on a cap or in any way. And yet, having taken the trouble to devise and execute a test for proving the harmlessness of the substances concerned, Dr. Carleton says: "Quite apart from a possibly carcinogenic effect, inflammation of the cervical mucosa *might* be elicited by certain chemical products." What is the use of a test that leaves such a doubt in one's mind? He goes on to mention the possibility of an irritation-carcinoma arising in a cervix repeatedly subjected to contact with a chemical contraceptive, and emphasizes the length of time necessary for the development of such a condition. But why insist on this bogy, provided none but non-irritating substances are used, unless indeed one must assume that an irritation-cancer may be produced by a non-irritating (and therefore presumably non-carcinogenic) substance? Surely this is the kind of caution which would prompt one to warn a woman against

the constant use of lipstick lest she might develop carcinoma of the lip; or which would prevent one from ever crossing a road in case one might be run over.

Finally, a word about the long latent period necessary for the development of these tumours. Several of the birth-control clinics now have records dating back ten to fourteen years of women who have constantly been using caps covered with a chemical contraception of some sort. If the result suggested by Dr. Carleton is a practical possibility, surely it would have made itself manifest by this time.

MARGARET C. N. JACKSON.

EUGENICS

A Decade of Progress in Eugenics. Scientific Papers of the Third International Congress of Eugenics, held at the American Museum of National History, New York, August 21st-23rd, 1932. Baltimore, 1934. Williams & Wilkins. Pp. xii+531.

THIS volume contains no fewer than sixty-nine papers, together with a complete list of exhibits copiously illustrated. There is also a large Conference photograph and details of membership and so forth. The Conference and this volume were intended to mark the advance made in the field of eugenics, both as a pure and as an applied science, between the meeting of the second Conference in 1921 and the third in 1932.

Many of the papers are very brief, and, in view of the fact that the Conference completed its vast programme in three days, one gathers that the papers as read could not have been much longer. The plan would appear to be a brief summary of as many subjects as possible that came within the scope of the Conference. Some papers give a number of references, but most give few or none. The volume is therefore not a storehouse of statistical data, but it does indeed accomplish its aim as already set out. There will be found condensed accounts, for the most part crisp and stimulating, of almost every aspect of eugenics. The main sections are anthropomotetric methods; race amalgamation; education and eugenics; positive and negative eugenics; selection, disease, fertility; differential fecundity; human genetics. A number of papers are however essentially records of original work. Included amongst these are papers on selective elimination as a factor in increasing the immunity of populations; on the inheritance of allergy; on heredity and manic-depressive insanity; and on sex differences in dentition.

This book is an excellent record of a Conference that gave adequate expression to ten years of continued progress in the most varied fields, and no one interested in any aspect of the subject can fail to find a number of papers of interest and value.

J. A. FRASER ROBERTS.

Hildebrandt, Wilhelm. *Rassenmischung und Krankheit.* Stuttgart, 1935. Hippokrates-Verlag. Pp. 110. Price RM. 7.50.

THIS book is compiled from a manuscript and various notes left behind by the late Professor Hildebrandt, and edited by his pupil Dr. Gerling. As is admitted in the preface, it is intended rather to serve as a suggestion of future work than to give an exact scientific solution of definite problems. That would indeed be impossible with the comparatively small material on race-crossing which has been collected up to now.

The author's main thesis is that race-crossing produces in the offspring an inharmonious set of chromosomes, which again leads to other discrepancies in the formation and function of the various organs, especially of the endocrine glands. A number of affections are discussed in which the influence of hybridization has been observed. One of the most common among them is goitre. This disease is reported *never* to occur in really pure-blooded Nordics.

It seems to me that the proper objects of studies of this kind should at first be the offspring of very heterogeneous matings, as between whites and negroes, or whites and Chinese. In Central Europe, Nordic, Alpine,